



A RESOURCE ENGINEERING COMPANY

696 VIRGINIA ROAD, CONCORD, MA 01742. (617) 369-8910

Wells 6+H
11.8
Admin Record

environmental and engineering excellence

Superfund Records Center

SITE: Wells 6+H

BREAK: 11.8

OTHER:

ERT Document No: D495-004
ERT Reference No: 510-JTL-770

February 17, 1988

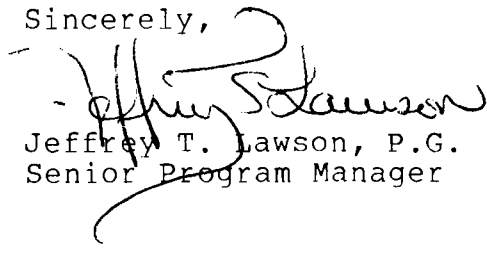
Ms. Barbara Newman
United States Environmental Protection Agency
Region I
JFK Federal Building
Boston, MA 02203-2211

RE: UniFirst Corporation, Woburn, Massachusetts

Dear Ms. Newman:

Pursuant to the administrative order by consent between the United States Environmental Protection Agency and UniFirst Corporation (US EPA Docket No. 1-87-1108), I have enclosed three copies of a summary report according to the requirements of paragraph 15 of the order. Please call me should you have any questions.

Sincerely,


Jeffrey T. Lawson, P.G.
Senior Program Manager

JTL/maz

cc: Jeffrey C. Bates
John A. Cherry



SDMS DocID 295856

Summary of Investigation UniFirst Site Woburn, Massachusetts

Prepared for:

UniFirst Corporation
Wilmington, MA

February 1988

ERT[®]

A RESOURCE ENGINEERING COMPANY

Document No. D495-004

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1. INTRODUCTION

This report is submitted in accordance with paragraph 15 of the Administrative Order By Consent between the U.S. Environmental Protection Agency Region I (EPA) and UniFirst Corporation, EPA Docket No. 1-87-1108 (Order). The report describes the methods of investigation, findings, conclusions and recommendations resulting from execution of the investigative tasks described in the Project Operation and Investigation Plan (POIP) submitted to EPA on September 8, 1987. These tasks were undertaken to fulfill the objectives in paragraph 2 of the Order: "to provide for the investigation, removal, subsequent treatment, and recycling or disposal of dense non-aqueous phase liquid ("DNAPL") found in the shallow bedrock aquifer below the UniFirst property."

Section 2 of this report describes the methods of investigation. Section 3 details the findings and conclusions of the investigation. Section 4 provides recommendations based on the results of this investigation. Finally, well logs, laboratory data sheets and copies of field notes are provided in appendices.

2. METHODS OF INVESTIGATION

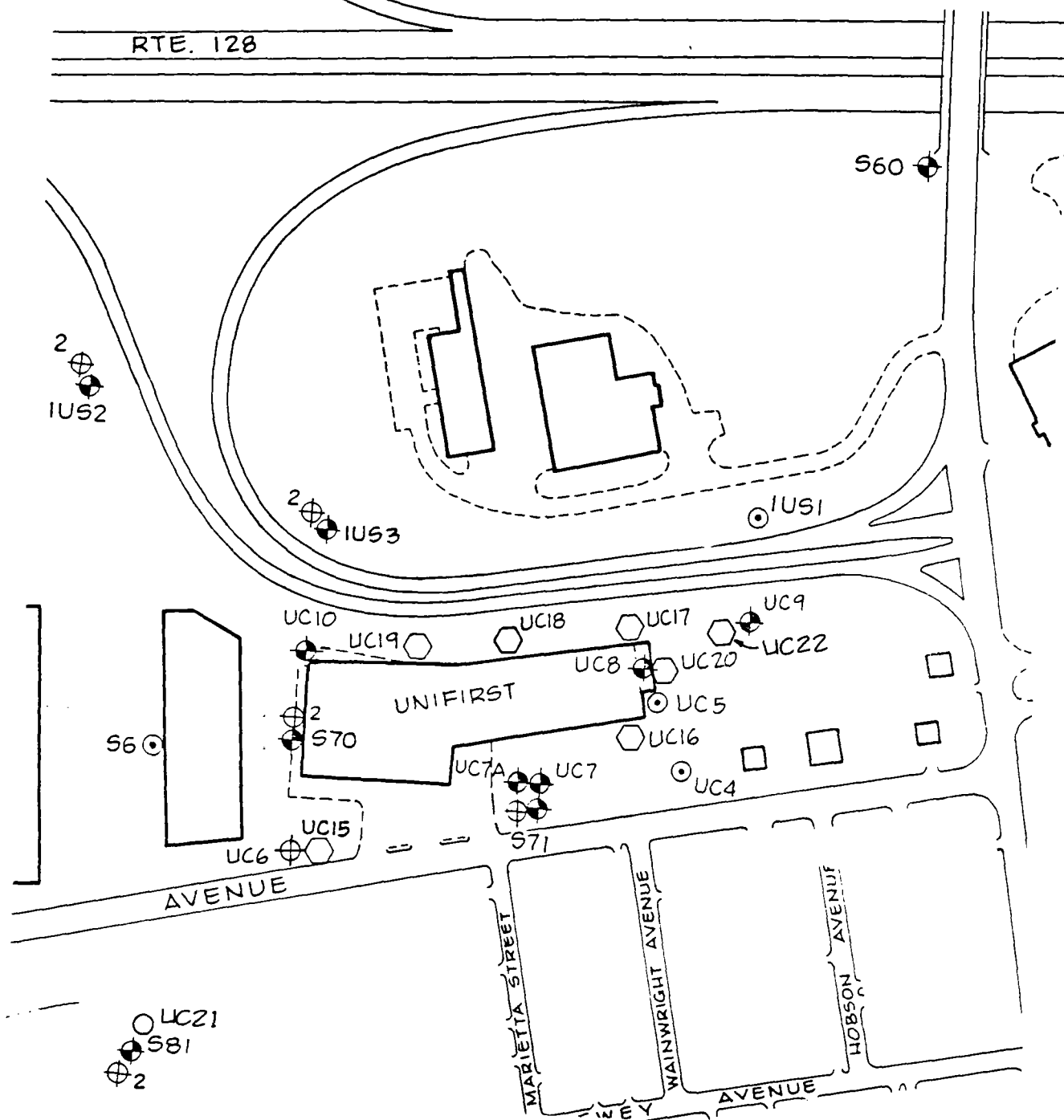
The nature and extent of DNAPL in the bedrock underlying the UniFirst property (Site) was investigated by means of installing six shallow bedrock wells and analyzing ground-water samples from these wells. Figure 2-1 illustrates the locations of these wells. In addition, well UC8 was reconstructed and the DNAPL therein was removed.

2.1 Shallow Bedrock Wells

The well locations were chosen to provide direct information on whether DNAPL was present in the shallow bedrock adjacent to well UC8 (wells UC17 and UC20); between wells UC8 and UC7 (well UC16); between wells UC8 and UC10 (wells UC18 and UC19) and in the vicinity of well UC6 (well UC15). In addition, these wells were constructed to provide ground-water samples and hydraulic-testing data.

These wells are six inches in diameter. Steel casing was installed through the unconsolidated deposits and socketed into the top of rock to the minimum depth necessary to minimize caving of the open bedrock boring. The casing was not grouted in place. Boring was to be continued until a relatively transmissive zone was encountered or to a depth of twenty feet below the top of rock, whichever was shallowest. None of the wells developed measureable quantities of water during drilling; therefore, drilling was generally terminated at approximately 20 feet below the bottom of the casing. Well construction details are summarized in Table 2-1 and the logs are contained in Appendix A. The wells were finished by cutting the casing off approximately 0.2 feet below ground surface and installing a road box supported in a concrete collar around the casing. The wells were not developed or otherwise pumped until they were probed and sampled for DNAPL.

D49-205



EXPLANATION

- 6-inch Shallow Bedrock Well; UC22 Is 8-Inch
- ⊕ Monitoring Well Screened in Bedrock
- ⊕ Monitoring Well Screened in Overburden
- ⊙ Monitoring Well Screened in Bedrock and Overburden
- Bedrock Boring Tremie Grouted To Surface

SCALE
0 50 100 200
FEET



FIGURE 2-1 Well Location Map
2-2

TABLE 2-1
SUMMARY OF WELL CONSTRUCTION INFORMATION

<u>Well No.</u>	<u>Total Depth</u> ¹	<u>Depth to Bedrock</u>	<u>Depth of Casing</u>	<u>Diameter of Casing/Riser</u>	<u>Depth to Ground Water</u>	<u>Date of G.W.L.</u>
UC 8 ²	20.8	8.3	7.9	4 in./2 in.	5.5	11/9/87
UC 15	79.0	51.0	54.0	6 in.	11.5	10/28/87
UC 16	28.4	8.0	11.0	6 in.	10.2	10/28/87
UC 17	30.0	9.0	11.7	6 in.	9.4	10/28/87
UC 18	33.0	10.5	13.4	6 in.	11.5	10/28/87
UC 19	58.6	37.5	40.3	6 in.	10.9	10/28/87
UC 20	27.0	6.3	8.0	6 in.	15.2	10/28/87

- Notes:
1. All depths are measured in feet and tenths from the ground surface except depth to ground water, which is measured from the top of the casing.
 2. All wells are 6-inch diameter cased and open borings except UC 8, which is 3-inch (NQ) diameter and completed with 15 feet of 2-inch diameter stainless-steel screen and 5 feet of blank stainless-steel riser. The stainless-steel well rests in the boring without packing or seals.
 3. Logs are contained in Appendix A.

D.L. Maher Company (Maher) of North Reading, Massachusetts drilled the wells with a Barber Co. Ltd. air-rotary rig that is equipped with a cuttings-collection system. This system collected the cuttings as they emerged from the annular space between the casing and the drill rods. From there, the cuttings were conducted to a cyclone from the bottom of which the cuttings were discharged in a controlled manner to the bucket of a Bobcat loader. When the bucket was filled to capacity, it was transported to and its contents dumped into a roll-off container located on site. The level of volatile organic compounds emanating from the cuttings were monitored with an HNu at the cyclone. None of the cuttings produced a response on the HNu greater than background levels (0.2 to 4.0 units on the 20 scale). These cuttings were analyzed for Hazardous Substance List volatile organic compounds upon completion of the well-installation program, and none were detected. The residual water in the roll-off container was analyzed for the same compounds; 50 micrograms per liter methylene chloride and 3.8 micrograms per liter benzene were detected. This water will be pumped out and transported to CECOS' facility in Bristol, Connecticut or DuPont's Chambers Works in Deepwater, New Jersey for treatment and disposal. The dewatered cuttings will be disposed of on-site as common fill. Appendix B contains the results of all laboratory analysis.

The drill rig and tools were steam cleaned prior to mobilization at the site, between each boring and at the completion of the drilling program. On-site steam cleaning was carried out in a bermed area that allowed for collection of condensate water. The water was pumped into DOT approved drums, sampled and analyzed for Hazardous Substance List volatile organic compounds. None of these compounds were detected. As a precautionary measure, this waster was transported with the UC8 drill water to the Rollins Environmental Services facility for disposal as described in the following section.

Attempts to detect the presence of DNAPL in the newly constructed six-inch wells were carried out on October 27, 1987 by first lowering an electric sounder to the bottom of the well and determining whether the circuit was broken below the water table; secondly by lowering a new, laboratory-decontaminated Teflon bailer to the bottom of the well and examining the retrieved contents for free product; and finally by performing laboratory analyses on a sample of ground water for Hazardous Substance List volatile organic compounds. In each well, the sample of ground water was retrieved from the bottom of the well in order to maximize the possibility of detecting DNAPL. In addition, an informal HNu headspace analysis was performed in the field on a sample of ground water from each well in order to gain a qualitative indication of the concentration, if any, of dissolved volatile compounds.

2.2 Reconstruction of Well UC8

Well UC8, which was partially caved in, was reconstructed by advancing a roller bit through the obstruction without using water. After drilling through the obstruction, the well was probed as described above for DNAPL. The DNAPL encountered was pumped into sample bottles. Less than two liters of product were recovered. Specifically, five 40-milliliter vials, one one-liter bottle and approximately three centimeters depth in the bottom of a two liter bottle were filled with DNAPL. All recoverable DNAPL was collected in sample bottles. The sample of DNAPL was analyzed for all Hazardous Substance List organic compounds.

After recovery of the product, the well was washed out with water running through the roller bit. All drill water was collected in DOT approved drums, manifested and transported by Franklin Pumping Service, Inc. of Wrentham, Massachusetts to Rollins Environmental Services facility in Bridgeport, New Jersey for disposal by incineration.

3. FINDINGS AND CONCLUSIONS

Table 3-1 summarizes the results of analyses performed on ground-water samples from the six-inch wells and DNAPL from well UC8. In addition, the HNu headspace responses for the ground-water samples are tabulated.

3.1 Six-Inch Wells

Wells UC15 through UC20 were installed to detect DNAPL that might have migrated from the immediate vicinity of well UC8 through the shallow bedrock. The results of probing wells UC15 through UC20 and analyses performed on samples of ground water from each of these wells indicate that there is no DNAPL in these wells.

3.2 Well UC8

Less than two liters of DNAPL was recovered from well UC8. Subsequent probing of well UC8 with electric sounders and bailers indicated no accumulation of product. When UC8 was repeatedly bailed, DNAPL was detected as small (approximately one quarter inch) brown patches that occasionally appeared on the bailer. Analysis of the DNAPL indicated that it contained: 19,000,000 micrograms per liter (approximately 2 percent) tetrachloroethene; 32,000 micrograms per liter naphthalene, and 150,000 micrograms per liter bis(2-ethylhexyl) phthalate.

3.3 Conclusion

These findings indicate that the DNAPL in the shallow bedrock is confined to the immediate vicinity, within a maximum of 15 feet, (the distance between well UC8 and the closest six-inch well, UC20) of well UC8. Furthermore, any residual DNAPL in the vicinity of well UC8 is contained within bedrock fractures and is not effectively recoverable as a separate non-aqueous phase.

TABLE 3-1
SUMMARY OF ANALYTICAL RESULTS, GROUND-WATER AND DNAPL
RESULTS IN MICROGRAMS PER LITER (PARTS PER BILLION)

Well No.	HNU Response ¹	Volatile Organic Compounds					Base/Neutral Organic Compounds		
		Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Dichloroethene	1,1 Dichloroethane	Detection Limit	Naphthalene	Bis(2-Ethylhexyl)Phthalate	Detection Limit
UC 15	110	17,000	ND	ND	ND	400	- ²	-	-
UC 16	30	2,600	280	ND	ND	50	-	-	-
UC 17	2	1,300	ND	ND	ND	40	-	-	-
UC 18	3	4,300	ND	ND	ND	200	-	-	-
UC 19	NR ⁴	ND	ND	ND	ND	2	-	-	-
UC 20	1	85	11	2.0	6.2	2	-	-	-
UC 8 Product	NA ⁵	19,000,000	ND	ND	ND	200,000	32,000	150,000	10, 20 ³
Cuttings Composite	NA	ND	ND	ND	ND	60 µg/kg ⁶	-	-	-

- Notes:
1. HNU response was measured in the headspace of a jar that contained a sample of ground water from the wells.
 2. Ground-water samples from wells UC15 through UC20 were analyzed for volatile organic compounds only.
 3. The detection limits are given for Naphthalene and Bis(2-ethylhexyl) phthalate respectively.
 4. NR No Response
 5. NA Not Analyzed
 6. Results for the analyses of the cuttings are reported in micrograms per kilogram.
 7. All field and shipping blanks did not contain detectable concentrations of the compounds that were analyzed for.

4. RECOMMENDATIONS

No further investigatory work in relation to determining the nature and extent of the DNAPL in the shallow bedrock at the site is recommended. The extent of the DNAPL in the shallow bedrock and the chemical composition of the DNAPL have been determined. In addition, all recoverable DNAPL has been removed from well UC8.

APPENDIX A
WELL LOGS

Project UNIFIRST Site Woburn **BORING UC8** Sh 1 of 2
 Date Started 1/6/87 Completed 1/8/87 Ground Elevation _____
 Total Depth 20.8 Location _____ Logged by J.T. Lawson
 Using I.D. 4in, 2in riser Contractor Guild Drilling Co.
 Remarks See notes at end of log

ment
illed

Flow Cust	Depth Feet	Sample				Graphic Log	Sample Description	Equipment Installed Road Box
		Type & Number	Blows per 6 in.	Depth Range	Rec.			
	1	SS1	2/1.5	0.7 to 2.2	0.2		0.0 - 0.45 Concrete Floor Cored with 12in thin-wall HNU no response below floor	2in ϕ stainless steel blank riser
	2						soil settles to 0.7 during removal of concrete core	
	3	SS2	1/1.5	2.2 to 3.7	0.1		0.7 - 2.2 Brown medium to fine SAND trace silt	4in steel Casing
	4	SS3	14-9-5	3.7 to 5.2	1.0		HNU no response in jar	
	5						2.2-3.7 Pebble blocked shoe	
	6	SS4	7-6-15	5.2 to 6.7	1.2		3.7-3.9 Bituminous Concrete Pavement	
	7	SS5	see Note 1	6.7- 7.7	0.8		3.9-4.2 1/4 in Crushed Stone	bottom of casing 7.9'
	8	SS6	see Note 1	7.7- 8.0	0.3		4.2-6.4 Brown coarse to fine SAND & GRAVEL	
	9	SS7	see Note 1	8.2- 8.3	0		HNU response ~250 in jar	
	10		RQD				6.4-6.7 Black fine SAND	
	11	NQ 1	16%	8.3 to 12.8	2.7		HNU response in jar: 5.7-6.4 ~30 6.4-6.7 ~5	NQ Cored Boring
	12						5.7-6.7 Slow roller-bit advance, metal "flakes" in wash	
	13						6.7-7.7 Gray - green gray coarse to fine SAND	2in ϕ stainless steel 10 mil slot screen
	14	NQ 2	92%	12.8 to 16.8	3.8		some silt trace gravel (Till) HNU response in jar ~2	
	15						7.7-8.0 Gray - green gray coarse to fine SAND & GRAVEL little silt	
	16							
	17							

at of
oil
riser;

Project <u>UNITECH</u>		Site <u>Woburn</u>		BORING <u>UC15</u>		Sh 1 of <u> </u>	
Date Started <u>9/29/87</u>		Completed <u>9/29/87</u>		Ground Elevation <u> </u>			
Total Depth <u>79.0 ft</u>		Location <u> </u>		Logged by <u>J. T. Lawson</u>			
Casing I.D. <u>6 in</u>		Contractor <u>D.L. Maher; John Bowen Driller</u>					
Remarks <u>boring advanced with a Barber air-rotary rig;</u> <u>no samples taken; boring left cased and open;</u> <u>head secured in a road box</u>							

Elev. Feet	Depth Feet	Sample				Graphic Log	Sample Description	Equipment Installed
		Type & Number	Blows per 6 in.	Depth Range	Rec.			
	20						cuttings dry	
	40							
	60							
	80						Top of Rock 51 ft casing installed to 54 ft 51 - 53.5 several soft zones ~0.1 ft thick, rapid casing advance; boulders or fractured and weathered rock blow out well at 71 ft; < 1 quart return drill to 79 ft, blow out well, no change Bottom of Boring 79.0 ft All rock cuttings are pink granoblastic and occasional dark gray gabbroic	

Project UNTERST Site WOBJEN **BORING** UC16 Sh 1 of 1
 Date Started 9/30/87 Completed 9/30/88 Ground Elevation _____
 Total Depth 28.4 Location _____ Logged by J. T. Lawson
 Casing I.D. 6 inch Contractor D.L. Maher; John Brown driller
 Remarks boring advanced with a Barner air-rotary rig;
no samples taking boring left cased and open;
head secured in a road box

Elev. Feet	Depth Feet	Sample				Graphic Log	Sample Description	Equipment Installed
		Type & Number	Blows per 6 in.	Depth Range	Rec.			
	5						0.0-0.2 Bituminous concrete 3-4 ft pink granodiorite boulder; very hard drilling; pull casing back to inspect shoe; shoe ok 6-6.5 ft dark gray gabbrodiorte boulder	
	10						Top of Rock 8 ft 9 ft inject water to control dust 9.5 ft minor << 1 gpm water return 8-10.5 ft casing advances quickly; => broken/weathered rock water injected throughout rock drilling to control dust; <40 gallons injected finished hole blown out; negligible water return casing installed to 11 ft All rock cuttings are pink granodiorite and occasional dark gray gabbrodiorte	
	15							
	20							
	25							
	30						Bottom of Boring 28.4 ft	

Project <u>UNIT FIRST</u>		Site <u>Woburn</u>		BORING <u>UC17</u>		Sh 1 of <u>1</u>	
Date Started <u>10/1/87</u>		Completed <u>10/1/87</u>		Ground Elevation _____			
Total Depth <u>30.0 ft</u>		Location _____		Logged by <u>J. J. Lawson</u>			
Casing I.D. <u>6 in</u>		Contractor <u>Dr. Maher; John Bower, Dr. J. J. Lawson</u>					
Remarks <u>boring advanced with a Barber air-rotary rig;</u> <u>no samples taken; boring left cased and open;</u> <u>head secured in road box</u>							

Elev. Feet	Depth Feet	Sample				Graphic Log	Sample Description	Equipment Installed
		Type & Number	Blows per 6 in.	Depth Range	Rec.			
	5						0.0 - 0.2 Bituminous Concrete 3-4 ft pink granodiorite boulder inject water 6.5 - 8.5 dark gray gabbro-diorite boulder	
	10						Top of Rock 9.0 ft casing installed to 11.7 ft All rock cuttings pink granodiorite	
	15							
	20							
	25							
	30						Bottom of Boring 30.0 ft	

Project UNITEST Site Woburn **BORING UC19** Sh 1 of 1
 Date Started 10/5/87 Completed 10/5/87 Ground Elevation _____
 Total Depth 58.6 ft Location _____ Logged by J. J. L...
 Casing I.D. 6 in. Contractor D.L. Maher, John Bowler
 Remarks boring advanced with a Barber air-rotary rig;
no samples taken; boring left cased and open;
head secured in a road box

Elev. Feet	Depth Feet	Sample				Graphic Log	Sample Description	Equipment Installed
		Type & Number	Blows per 6 in.	Depth Range	Rec.			
	10						0.0 - 0.2 Bituminous Concrete	
	20						~7 ft dark brown, medium to fine SAND, some silt, trace roots and twigs; old top soil	
	30						16.0 - 16.5 boulder	
	40						32.0 - 32.8 boulder	
	50						Top of Rock 37.5 rock cuttings dark gray granodiorite 39.0 ft inject water install casing to 40.3 ft ~45 pink granodiorite to ~50 dark gray granodiorite to end of boring ~53 water produced	
	60						End of Boring 58.6 ft Blow out well at 58.6 ft produced ~2 gpm for < 2 min. and < 1 gpm thereafter	

Project UNIFIRST Site Woburn **BORING** UC20 Sh 1 of 1
 Date Started 10/6/87 Completed 10/6/87 Ground Elevation _____
 Total Depth 27.0 ft Location _____ Logged by J. T. Lawson
 Casing I.D. 6 in. Contractor D.L. Maher; John Brown Driller
 Remarks boring advance with a Barber air-rotary rig;
no samples taken; boring left cased and open;
head secured in a road box

Elev. Feet	Depth Feet	Sample				Graphic Log	Sample Description	Equipment Installed
		Type & Number	Blows per 6 in.	Depth Range	Rec.			
	5						0.0 - 0.1 Bituminous Concrete	
	10						Top of Rock 6.3 ft rock cuttings dark gray gabbrodiorite to 7.0 ft pink and gray granodiorite install casing to 8.0 ft inject water at 8.0 ft well blown out at 27 ft << 1 gpm produced	
	20							
	25							
	30						Bottom of Boring 27.0 ft	

APPENDIX B
LABORATORY DATA SHEETS

Project UNIFIRST Site WOBURN **BORING** UC12 Sh 1 of 1
 Date Started 10/2/87 Completed 10/2/87 Ground Elevation _____
 Total Depth 33.0 ft Location _____ Logged by J. T. Lawson
 Casing I.D. 6 in Contractor D.L. Maher John Bowen Miller
 Remarks boring advanced with a Barber air-rotary rig;
no samples taken; boring left open and cased;
head secured in a road box

Elev. Feet	Depth Feet	Sample				Graphic Log	Sample Description	Equipment Installed
		Type & Number	Blows per 6 in.	Depth Range	Rec.			
	5						0.0 - 0.2 Bituminous Concrete rapid casing advance	
	10						7.5 - 8.5 boulders rapid casing advance	
	15						Top of Rock 10.5 ft install casing to 13.4 ft	
	20						rock cuttings predominantly dark gray gabbro diorite to 20 ft pink granodiorite to end of boring	
	25							
	30							
							End of Boring 33.0 ft	

LABORATORY DATA PACKAGE FOR
VOLATILE ORGANIC HAZARDOUS SUBSTANCE
LIST COMPOUNDS IN:

1. Ground-water samples from
wells UC15, UC16, UC17, UC18
UC19 and UC20
2. Rig decontamination steam-cleaning
condensate
3. Drill cuttings: rock dust
and water container in the
roll-off container

ANALYSIS OF WATER AND SOIL SAMPLES
FROM
UNIFIRST, WOBURN

ERT PROJECT NO. 0005-446
November 25, 1987

PREPARED FOR

J. Lawson

Prepared by
Analytical Chemistry Laboratory
ERT, A Resource Engineering Company
33 Industrial Way, Wilmington, Massachusetts 01887

ANALYSIS OF SOIL AND WATER SAMPLES
FROM
UNIFIRST, WOBURN

INTRODUCTION

This report represents the results of analysis conducted on various soil and water samples received by the ERT Analytical Chemistry Laboratory on October 28, 1987. The samples were to be selectively analyzed for volatiles (GC/MS).

SAMPLE RECEIPT AND CHAIN OF CUSTODY

Routine inspection of the samples revealed them to be packaged properly and received in good condition.

Upon receipt, information from the submitted samples was recorded in the Master Log Book (and the LIMS computer system) and assigned ERT Control Numbers. These unique sample labels were affixed to respective sample containers and subsequently utilized throughout the laboratory analysis procedures for positive traceability.

ANALYTICAL PROCEDURES

The water samples were analyzed according to procedures as outlined in:

- a. Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, 40 CFR Part 136.
- b. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, revised, March, 1983.
- c. Standard Methods for the Examination of Water and Wastewater, 16th Edition, APHA, 1985.

The soil samples were analyzed according to procedures as outlined in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846, 2nd Edition, revised April, 1984.

QUALITY CONTROL PROCEDURES

Standard quality control procedures were implemented for all analyses. Laboratory reagent (method) blanks, laboratory duplicated samples, and laboratory fortified control samples were analyzed concurrently with each case of submitted samples. The laboratory normally prepares and analyzes one (1) blank, one (1) fortified sample, and one (1) duplicate sample for each case of samples received or for each twenty (20) samples, whichever is more frequent. A case consists of a finite, usually predetermined number of samples collected over a given time period from one particular site. Duplicate sample analyses are performed only when sufficient sample volume is received. The results of the analyses are reviewed by the laboratory quality control coordinator to insure compliance with established analytical control limits.

Laboratory prepared method blank samples and fortified samples are identified in the analytical result tables under the Field Identification number using a unique numbering system and also assigning one ERT sample number to each sample. The Prefix "MB" refers to Method Blank, and "LF" refers to Laboratory Fortification (i.e., a quality control recovery sample).

In most cases, the analytical results will have been corrected using mean method blank results.

RESULTS OF ANALYSIS

Analytical results for the submitted samples are presented in the appended tables. Summary tables for the results of duplicate, blank, and fortified control samples have also been provided in the Appendix.

DISCUSSION

Review of the results of the quality control/quality assurance samples analyzed concurrently with the submitted samples indicated that the analyses were within the acceptance criteria as established by the U.S. EPA.

DATA AND REPORT APPROVAL FORM

SUBMITTED BY:

Analytical Chemistry Laboratory
ERT A Resource Engineering Company
33 Industrial Way
Wilmington, MA 01887
November 25, 1987

DATA AUDITED BY:

M. S. Sparlin



Quality Control Coordinator

REPORT APPROVED BY:

A. P. Paradice



Laboratory Manager

VOLATILE ORGANIC ANALYSES IN WATER

Summary of Analytical Results

Method Blank Results

Quality Control Check Sample Results

VOLATILE ORGANICS

Surrogate Recovery Summary

Client Name: Unifirst Woburn Project No.: 0005-44bMatrix: WaterAuthorized: 10/29/87Received: 10/29/87

ERT ID	Field ID	Client ID	Surrogate Compound		
			d,-1,2,-Dichloro-ethane	d,-Toluene	p-Bromofluoro-benzene
5756-01	UC15	48804	102	100	100
5756-02	UC19	48805	102	99	99
5756-03	UC18	48806	102	102	100
5756-04	UC17	48807	103	102	100
5756-05	UC20	48808	102	103	96
5756-06	UC16	48809	102	98	103
5756-07	Bailer	48810	97	100	98
5756-08	Blank	48811	90	99	88
5756-10	Roll Off Water	48814	92	99	90
5756-11	Shipping Blank	48813	97	98	92
	Decom Drums				
32928	ERT Procedural				
	Blank - Water /50210		99	103	98
33068	ERT Procedural				
	Blank - Water /50211		96	101	98
33318	ERT Procedural				
	Blank - Water /50212		92	101	97
03978	ERT Procedural				
	Blank - Methanol/50213		103	103	99

QC Advisory Limits:

76-114%

88-110%

86-115%

Reported by CLApproved by GBSup

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst WoburnProject No.: 0005-446Client ID: 48804 UC15Laboratory ID: 5756-01Matrix: WaterSampled: 10/28/87Received: 10/29/87Authorized: 10/29/87Prepared: 11/07/87Analyzed: 11/07/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	1,000
Bromomethane	ND	µg/L	1,000
Vinyl chloride	ND	µg/L	1,000
Chloroethane	ND	µg/L	1,000
Methylene chloride	ND	µg/L	1,000
Acetone	ND	µg/L	10,000
Carbon disulfide	ND	µg/L	400
1,1-Dichloroethene	ND	µg/L	400
1,1-Dichloroethane	ND	µg/L	400
trans-1,2-Dichloroethene	ND	µg/L	400
Chloroform	ND	µg/L	400
1,2-Dichloroethane	ND	µg/L	400
2-Butanone	ND	µg/L	2,000
1,1,1-Trichloroethane	ND	µg/L	400
Carbon tetrachloride	ND	µg/L	400
Vinyl acetate	ND	µg/L	2,000
Bromodichloromethane	ND	µg/L	400
1,2-Dichloropropane	ND	µg/L	400
trans-1,3-Dichloropropene	ND	µg/L	400
Trichloroethene	ND	µg/L	400
Dibromochloromethane	ND	µg/L	400
1,1,2-Trichloroethane	ND	µg/L	400
Benzene	ND	µg/L	400
cis-1,3-Dichloropropene	ND	µg/L	400
2-Chloroethyl vinyl ether	ND	µg/L	2,000
Bromoform	ND	µg/L	400
4-Methyl-2-pentanone	ND	µg/L	2,000
2-Hexanone	ND	µg/L	2,000
1,1,2,2-Tetrachloroethane	ND	µg/L	400
Tetrachloroethene -----	17,000	µg/L	400
Toluene	ND	µg/L	400
Chlorobenzene	ND	µg/L	400
Ethyl benzene	ND	µg/L	400
Styrene	ND	µg/L	400
Total xylenes	ND	µg/L	400

ND = Not detected.

Reported by UApproved by CB lp

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446
Client ID: 48805 UC19
Laboratory ID: 5756-02
Matrix: Water Sampled: 10/28/87 Received: 10/29/87
Authorized: 10/29/87 Prepared: 11/07/87 Analyzed: 11/07/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	10
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethane	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

NA = Not applicable.

ND = Not detected.

Reported by [Signature] Approved by [Signature] [Signature]

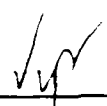
HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446Client ID: 48806 UC18Laboratory ID: 5756-03Matrix: Water Sampled: 10/28/87 Received: 10/29/87Authorized: 10/29/87 Prepared: 11/07/87 Analyzed: 11/07/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	500
Bromomethane	ND	µg/L	500
Vinyl chloride	ND	µg/L	500
Chloroethane	ND	µg/L	500
Methylene chloride	ND	µg/L	500
Acetone	ND	µg/L	5,000
Carbon disulfide	ND	µg/L	200
1,1-Dichloroethene	ND	µg/L	200
1,1-Dichloroethane	ND	µg/L	200
trans-1,2-Dichloroethene	ND	µg/L	200
Chloroform	ND	µg/L	200
1,2-Dichloroethane	ND	µg/L	200
2-Butanone	ND	µg/L	1,000
1,1,1-Trichloroethane	ND	µg/L	200
Carbon tetrachloride	ND	µg/L	200
Vinyl acetate	ND	µg/L	1,000
Bromodichloromethane	ND	µg/L	200
1,2-Dichloropropane	ND	µg/L	200
trans-1,3-Dichloropropene	ND	µg/L	200
Trichloroethene	ND	µg/L	200
Dibromochloromethane	ND	µg/L	200
1,1,2-Trichloroethane	ND	µg/L	200
Benzene	ND	µg/L	200
cis-1,3-Dichloropropene	ND	µg/L	200
2-Chloroethyl vinyl ether	ND	µg/L	1,000
Bromoform	ND	µg/L	200
4-Methyl-2-pentanone	ND	µg/L	1,000
2-Hexanone	ND	µg/L	1,000
1,1,2,2-Tetrachloroethane	ND	µg/L	200
Tetrachloroethene -----	4,300	µg/L	200
Toluene	ND	µg/L	200
Chlorobenzene	ND	µg/L	200
Ethyl benzene	ND	µg/L	200
Styrene	ND	µg/L	200
Total xylenes	ND	µg/L	200

ND = Not detected.

Reported by  Approved by CEB 

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446
Client ID: 48807 UC17
Laboratory ID: 5756-04
Matrix: Water Sampled: 10/28/87 Received: 10/29/87
Authorized: 10/29/87 Prepared: 11/07/87 Analyzed: 11/07/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	100
Bromomethane	ND	µg/L	100
Vinyl chloride	ND	µg/L	100
Chloroethane	ND	µg/L	100
Methylene chloride	ND	µg/L	100
Acetone	ND	µg/L	1,000
Carbon disulfide	ND	µg/L	40
1,1-Dichloroethene	ND	µg/L	40
1,1-Dichloroethane	ND	µg/L	40
trans-1,2-Dichloroethene	ND	µg/L	40
Chloroform	ND	µg/L	40
1,2-Dichloroethane	ND	µg/L	40
2-Butanone	ND	µg/L	200
1,1,1-Trichloroethane	ND	µg/L	40
Carbon tetrachloride	ND	µg/L	40
Vinyl acetate	ND	µg/L	200
Bromodichloromethane	ND	µg/L	40
1,2-Dichloropropane	ND	µg/L	40
trans-1,3-Dichloropropene	ND	µg/L	40
Trichloroethene	ND	µg/L	40
Dibromochloromethane	ND	µg/L	40
1,1,2-Trichloroethane	ND	µg/L	40
Benzene	ND	µg/L	40
cis-1,3-Dichloropropene	ND	µg/L	40
2-Chloroethyl vinyl ether	ND	µg/L	200
Bromoform	ND	µg/L	40
4-Methyl-2-pentanone	ND	µg/L	200
2-Hexanone	ND	µg/L	200
1,1,2,2-Tetrachloroethane	ND	µg/L	40
Tetrachloroethene -----	1,300	µg/L	40
Toluene	ND	µg/L	40
Chlorobenzene	ND	µg/L	40
Ethyl benzene	ND	µg/L	40
Styrene	ND	µg/L	40
Total xylenes	ND	µg/L	40

ND = Not detected.

Reported by YJ Approved by CR ✓

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-116
Client ID: 48808 UC-20
Laboratory ID: 5756-05
Matrix: Water Sampled: 10/28/87 Received: 10/29/87
Authorized: 10/29/87 Prepared: 11/07/87 Analyzed: 11/07/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	10
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane -----	6.2	µg/L	2
trans-1,2-Dichloroethene -----	2.0	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane -----	11	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene -----	85	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

ND = Not detected.

Reported by  Approved by  

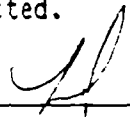

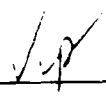
HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446
Client ID: 48809 UC16
Laboratory ID: 5756-06
Matrix: Water Sampled: 10/28/87 Received: 10/29/87
Authorized: 10/29/87 Prepared: 11/08/87 Analyzed: 11/08/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	130
Bromomethane	ND	µg/L	130
Vinyl chloride	ND	µg/L	130
Chloroethane	ND	µg/L	130
Methylene chloride	ND	µg/L	130
Acetone	ND	µg/L	1,300
Carbon disulfide	ND	µg/L	50
1,1-Dichloroethene	ND	µg/L	50
1,1-Dichloroethane	ND	µg/L	50
trans-1,2-Dichloroethene	ND	µg/L	50
Chloroform	ND	µg/L	50
1,2-Dichloroethane	ND	µg/L	50
2-Butanone	ND	µg/L	250
1,1,1-Trichloroethane -----	280	µg/L	50
Carbon tetrachloride	ND	µg/L	50
Vinyl acetate	ND	µg/L	250
Bromodichloromethane	ND	µg/L	50
1,2-Dichloropropane	ND	µg/L	50
trans-1,3-Dichloropropene	ND	µg/L	50
Trichloroethene	ND	µg/L	50
Dibromochloromethane	ND	µg/L	50
1,1,2-Trichloroethane	ND	µg/L	50
Benzene	ND	µg/L	50
cis-1,3-Dichloropropene	ND	µg/L	50
2-Chloroethyl vinyl ether	ND	µg/L	250
Bromoform	ND	µg/L	50
4-Methyl-2-pentanone	ND	µg/L	250
2-Hexanone	ND	µg/L	250
1,1,2,2-Tetrachloroethane	ND	µg/L	50
Tetrachloroethene -----	2,600	µg/L	50
Toluene	ND	µg/L	50
Chlorobenzene	ND	µg/L	50
Ethyl benzene	ND	µg/L	50
Styrene	ND	µg/L	50
Total xylenes	ND	µg/L	50

ND = Not detected.

Reported by Approved by  

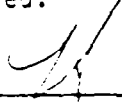


HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No: 10005-11bClient ID: 42810 Bailer BlankLaboratory ID: 5756-07Matrix: Water Sampled: 10/28/87 Received: 10/29/87Authorized: 10/29/87 Prepared: 11/09/87 Analyzed: 11/09/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	20
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

ND = Not detected.

Reported by Approved by  

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446
 Client ID: 48811 Roll Off Water
 Laboratory ID: 5756-08
 Matrix: Water Sampled: 10/28/87 Received: 10/29/87
 Authorized: 10/29/87 Prepared: 11/08/87 Analyzed: 11/08/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride -----	50	µg/L	5
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene -----	3.8	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

ND = Not detected.

Reported by  Approved by  

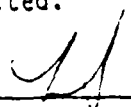

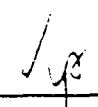
HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst WoburnProject No.: 0005-446Client ID: 48814 Shipping BlankLaboratory ID: 5756-10Matrix: WaterSampled: 10/28/87Received: 10/29/87Authorized: 10/29/87Prepared: 11/08/87Analyzed: 11/08/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	10
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

ND = Not detected.

Reported by Approved by  



HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No. 0005-116
Client ID: 48813 Decom Drums
Laboratory ID: 5756-11
Matrix: Water Sampled: 10/28/87 Received: 10/29/87
Authorized: 10/29/87 Prepared: 11/08/87 Analyzed: 11/08/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	10
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

ND = Not detected.

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HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

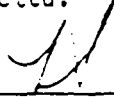

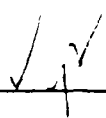
EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446
Client ID: ERT Procedural Blank - Water /50210
Laboratory ID: 3292B
Matrix: Water Sampled: NA Received: NA
Authorized: NA Prepared: 11/07/87 Analyzed: 11/07/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	5
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

NA = Not applicable.

ND = Not detected.

Reported by Approved by  

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst WoburnProject No.: 0005-446Client ID: ERT Procedural Blank - Water/50211Laboratory ID: 33068Matrix: WaterSampled: NAReceived: NAAuthorized: NAPrepared: 11/08/87Analyzed: 11/08/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	5
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

NA = Not applicable.

ND = Not detected.

Reported by MAApproved by CB 10

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446Client ID: ERT Procedural Blank - Water / 50212Laboratory ID: 33318Matrix: Water Sampled: NA Received: NAAuthorized: NA Prepared: 11/09/87 Analyzed: 11/09/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	5
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

NA = Not applicable.

ND = Not detected.

Reported by *ZJ* Approved by *EB* *14*

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-116Client ID: ERT Procedural Blank - Methanol / 50213Laboratory ID: 03978Matrix: Water Sampled: NA Received: NAAuthorized: NA Prepared: 11/10/87 Analyzed: 11/10/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	130
Bromomethane	ND	µg/L	130
Vinyl chloride	ND	µg/L	130
Chloroethane	ND	µg/L	130
Methylene chloride	ND	µg/L	130
Acetone	ND	µg/L	1,300
Carbon disulfide	ND	µg/L	50
1,1-Dichloroethene	ND	µg/L	50
1,1-Dichloroethane	ND	µg/L	50
trans-1,2-Dichloroethene	ND	µg/L	50
Chloroform	ND	µg/L	50
1,2-Dichloroethane	ND	µg/L	50
2-Butanone	ND	µg/L	250
1,1,1-Trichloroethane	ND	µg/L	50
Carbon tetrachloride	ND	µg/L	50
Vinyl acetate	ND	µg/L	250
Bromodichloromethane	ND	µg/L	50
1,2-Dichloropropane	ND	µg/L	50
trans-1,3-Dichloropropene	ND	µg/L	50
Trichloroethene	ND	µg/L	50
Dibromochloromethane	ND	µg/L	50
1,1,2-Trichloroethane	ND	µg/L	50
Benzene	ND	µg/L	50
cis-1,3-Dichloropropene	ND	µg/L	50
2-Chloroethyl vinyl ether	ND	µg/L	250
Bromoform	ND	µg/L	50
4-Methyl-2-pentanone	ND	µg/L	250
2-Hexanone	ND	µg/L	250
1,1,2,2-Tetrachloroethane	ND	µg/L	50
Tetrachloroethene	ND	µg/L	50
Toluene	ND	µg/L	50
Chlorobenzene	ND	µg/L	50
Ethyl benzene	ND	µg/L	50
Styrene	ND	µg/L	50
Total xylenes	ND	µg/L	50

NA = Not applicable.

ND = Not detected.

Reported by *SL* Approved by *CS* *1/1*

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624 + 624/HSL List

QUALITY CONTROL

Client Name: Unifirst Woburn Project No.: 0003-446

Client ID: Laboratory Control Spike Dup.

Laboratory ID: 3332LCSD

Matrix: Water Prepared: 11/09/87 Analyzed: 11/09/87

<u>Parameter</u>	<u>% Recovery</u>	<u>QC Advisory Limits</u>
1,1-Dichloroethene	98	61 - 145%
Trichloroethene	98	71 - 120%
Benzene	101	76 - 127%
Toluene	104	76 - 125%
Chlorobenzene	108	75 - 130%

Reported by  Approved by  

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624 + 624/HSL List

QUALITY CONTROL

Client Name: Unifirst Woburn

Project No.: 0005-446

Client ID: Laboratory Control Spike

Laboratory ID: 3293LCS

Matrix: Water

Prepared: 11/07/87

Analyzed: 11/07/87

<u>Parameter</u>	<u>% Recovery</u>	<u>QC Advisory Limits</u>
1,1-Dichloroethene	84	61 - 145%
Trichloroethene	90	71 - 120%
Benzene	88	76 - 127%
Toluene	87	76 - 125%
Chlorobenzene	90	75 - 130%

Reported by YH

Approved by CB LY

VOLATILE ORGANIC ANALYSES IN SOIL

Summary of Analytical Results

Method Blank Results

Quality Control Check Sample Results

VOLATILE ORGANICS

Surrogate Recovery Summary

Client Name: Unifirst Woburn Project No. 0005-116Matrix: SoilAuthorized: 10/29/87Received: 10/29/87

Surrogate Compound

ERT	ID	Field ID	Client ID	d ₄ -1,2,-Dichloro-ethane	d ₄ -Toluene	p-Bromofluoro-benzene
5756-09	Roll Off Soil		48612	108	102	97

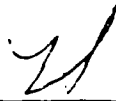
QC Advisory Limits:

70-121%

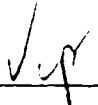
81-117%

74-121%

Reported by



Approved by



HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 8240/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446
Client ID: 48812 Roll Off Soil
Laboratory ID: 5756-09
Matrix: Soil Sampled: 10/28/87 Received: 10/29/87
Authorized: 10/29/87 Prepared: 11/04/87 Analyzed: 11/11/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/kg (dry wt)	150
Bromomethane	ND	µg/kg (dry wt)	150
Vinyl chloride	ND	µg/kg (dry wt)	150
Chloroethane	ND	µg/kg (dry wt)	150
Methylene chloride	ND	µg/kg (dry wt)	600
Acetone	ND	µg/kg (dry wt)	1,500
Carbon disulfide	ND	µg/kg (dry wt)	60
1,1-Dichloroethene	ND	µg/kg (dry wt)	60
1,1-Dichloroethane	ND	µg/kg (dry wt)	60
trans-1,2-Dichloroethene	ND	µg/kg (dry wt)	60
Chloroform	ND	µg/kg (dry wt)	60
1,2-Dichloroethane	ND	µg/kg (dry wt)	60
2-Butanone	ND	µg/kg (dry wt)	300
1,1,1-Trichloroethane	ND	µg/kg (dry wt)	60
Carbon tetrachloride	ND	µg/kg (dry wt)	60
Vinyl acetate	ND	µg/kg (dry wt)	300
Bromodichloromethane	ND	µg/kg (dry wt)	60
1,2-Dichloropropane	ND	µg/kg (dry wt)	60
trans-1,3-Dichloropropene	ND	µg/kg (dry wt)	60
Trichloroethene	ND	µg/kg (dry wt)	60
Dibromochloromethane	ND	µg/kg (dry wt)	60
1,1,2-Trichloroethane	ND	µg/kg (dry wt)	60
Benzene	ND	µg/kg (dry wt)	60
cis-1,3-Dichloropropene	ND	µg/kg (dry wt)	60
2-Chloroethyl vinyl ether	ND	µg/kg (dry wt)	300
Bromoform	ND	µg/kg (dry wt)	60
4-Methyl-2-pentanone	ND	µg/kg (dry wt)	300
2-Hexanone	ND	µg/kg (dry wt)	300
1,1,2,2-Tetrachloroethane	ND	µg/kg (dry wt)	60
Tetrachloroethene	ND	µg/kg (dry wt)	60
Toluene	ND	µg/kg (dry wt)	60
Chlorobenzene	ND	µg/kg (dry wt)	60
Ethyl benzene	ND	µg/kg (dry wt)	60
Styrene	ND	µg/kg (dry wt)	60
Total xylenes	ND	µg/kg (dry wt)	60

Solid content = 90%

ND = Not detected.

Reported by  Approved by  

CHAIN-OF-CUSTODY RECORD

UNIFIRST, WOBURN

0005-946

CHAIN OF CUSTODY RECORD

Client/Project Name		Project Location		ANALYSES										
Project No.		Field Logbook No.												
Sampler: (Signature)		Chain of Custody Tape No.												
Sample (No./ Identification)	Date	Time	Lab Sample Number	Type of Sample							REMARKS			
Roll Off	10/28/87	10:45	48812	Soil	✓									Had 250ml bottles
Decor. Drums	"	11:15	48813	Water	✓									Composited two
Shipping Bank			48814	"	✓									sample sets
Relinquished by: (Signature)				Date	Time	Received by: (Signature)				Date	Time			
Jany Boyan				10/28/87	13:25									
Relinquished by: (Signature)				Date	Time	Received by: (Signature)				Date	Time			
Relinquished by: (Signature)				Date	Time	Received for Laboratory: (Signature)				Date	Time			
						Kurt				10/28	1320			
Sample Disposal Method:				Disposed of by: (Signature)						Date	Time			
SAMPLE COLLECTOR				ANALYTICAL LABORATORY						ERT				
Environmental Research and Technology, Inc. 696 Virginia Road Concord, MA 01742 617-369-8910										Nº 9647				

0005-4416

CHAIN OF CUSTODY RECORD

Client/Project Name UNIFZEST				Project Location Woburn				ANALYSES				REGISTERED ON HNV HEAD REMARKS	
Project No. D495-004				Field Logbook No.									
Sampler (Signature) <i>[Signature]</i>				Chain of Custody Tape No.									
Sample No. Identification	Date	Time	Lab Sample Number	Type of Sample	VOA								
✓ UC 15	10/28/07	07:40	48804	Water	✓								Analyze in Duplicate
✓ UC 19	"	08:20	48805	"	✓								high conc.
✓ UC 18	"	08:40	48806	"	✓								
✓ UC 17	10/28/07	09:05	48807	"	✓								
✓ UC 20	"	09:25	48808	"	✓								
✓ UC 16	"	10:05	48809	"	✓								maybe high conc.
✓ Bailer Blank	"	10:15	48810	"	✓								on HNV HEAD
✓ Roll off water	"	10:30	48811	"	✓								
Relinquished by: (Signature) <i>[Signature]</i>				Date 10/28/07	Time 13:23	Received by: (Signature) <i>[Signature]</i>				Date	Time		
Relinquished by: (Signature)				Date	Time	Received by: (Signature)				Date	Time		
Relinquished by: (Signature)				Date	Time	Received for Laboratory (Signature) <i>[Signature]</i>				Date 10/28	Time 1323		
Sample Disposal Method:				Disposed of by: (Signature)				Date	Time				
SAMPLE COLLECTOR Environmental Research and Technology, Inc. 696 Virginia Road Concord, MA 01742 617-369-8910				ANALYTICAL LABORATORY				ERT No 9646					

ERT

SAMPLE RECEIPT CHECK LIST

Client: • *Unifirst Woburn*

COC Record #(s): *9646 - 9647*

Matrix	Container	ERT #(s)
<i>H₂O</i>	<i>3 100a vials</i>	<i>9646 - 9647</i>
<i>Soil</i>	<i>3 "</i>	
<i>Soil</i>	<i>250 ml amber</i>	

1. Were samples shipped or hand-delivered?

Notes: *Larry Hogan*

Yes ☒ No ☐

2. Was COC record present upon receipt of samples?

Notes:

Yes ☐ No ☒

3. Was COC tape present/unbroken on outer package?

Notes:

4. Were samples received ambient or chilled?

Notes:

Yes ☐ No ☒

5. Were any samples received broken/leaking (improperly sealed)?

Notes:

Yes ☒ No ☐

6. Were samples properly preserved?

Notes: *chilled*

Yes ☐ No ☒

7. Were COC types present/unbroken on samples?

Notes:

Yes ☐ No ☒

8. Any discrepancies between sample labels and COC records?

Notes:

Yes ☒ No ☐

9. Were samples received within holding times?

Notes:

Additional Comments:

Shipping Blanks not listed on COC

Samples inspected and logged in by

Kumar

Date:

10/28/07

LABORATORY DATA PACKAGE FOR
VOLATILE ORGANIC HAZARDOUS
SUBSTANCE LIST COMPOUNDS IN:

1. DNAPL (product) from well UC8

ANALYSIS OF WATER SAMPLES
FROM
UNIFIRST, WOBURN

ERT PROJECT NO. 0005-446
December 3, 1987

PREPARED FOR

J. Lawson
ERT Concord

Prepared by
Analytical Chemistry Laboratory
ERT, A Resource Engineering Company
33 Industrial Way, Wilmington, Massachusetts 01887

ANALYSIS OF SAMPLES
FROM
UNIFIRST, WOBURN

INTRODUCTION

This report represents the results of analysis conducted on various Water samples received by the ERT Analytical Chemistry Laboratory on November 2, 1987. The samples were to be selectively analyzed for Volatile Organic Compounds, Semi Volatile Organic Compounds, Pesticides and PCB's.

SAMPLE RECEIPT AND CHAIN OF CUSTODY

Routine inspection of the samples revealed them to be packaged properly and received in good condition.

Upon receipt, information from the submitted samples was recorded in the Master Log Book (and the LIMS computer system) and assigned ERT Control Numbers. These unique sample labels were affixed to respective sample containers and subsequently utilized throughout the laboratory analysis procedures for positive traceability.

ANALYTICAL PROCEDURES

The water samples were analyzed according to procedures as outlined in:

- a. Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, 40 CFR Part 136.
- b. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, revised, March, 1983.
- c. Standard Methods for the Examination of Water and Wastewater, 16th Edition, APHA, 1985.

QUALITY CONTROL PROCEDURES

Standard quality control procedures were implemented for all analyses. Laboratory reagent (method) blanks, laboratory duplicated samples, and laboratory fortified control samples were analyzed concurrently with each case of submitted samples. The laboratory normally prepares and analyzes one (1) blank, one (1) fortified sample, and one (1) duplicate sample for each case of samples received or for each twenty (20) samples, whichever is more frequent. A case consists of a finite, usually predetermined number of samples collected over a given time period from one particular site. Duplicate sample analyses are performed only when sufficient sample volume is received. The results of the analyses are reviewed by the laboratory quality control coordinator to insure compliance with established analytical control limits.

Laboratory prepared method blank samples and fortified samples are identified in the analytical result tables under the Field Identification number using a unique numbering system and also assigning one ERT sample number to each sample. The Prefix "MB" refers to Method Blank, and "LF" refers to Laboratory Fortification (i.e., a quality control recovery sample).

In most cases, the analytical results will have been corrected using mean method blank results.

RESULTS OF ANALYSIS

Analytical results for the submitted samples are presented in the appended tables. Summary tables for the results of duplicate, blank, and fortified control samples have also been provided in the Appendix. Not included in this report are the results for Semi Volatile Organics, Pesticides and PCB's. They will follow.

DISCUSSION

Review of the results of the quality control/quality assurance samples analyzed concurrently with the submitted samples indicated that the analyses were within the acceptance criteria as established by the U.S. EPA.

*Did not analyze
for pesticides + PCBs
this is a
mistake*

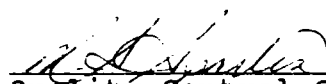
DATA AND REPORT APPROVAL FORM

SUBMITTED BY:

Analytical Chemistry Laboratory
ERT A Resource Engineering Company
33 Industrial Way
Wilmington, MA 01887
December 3, 1987

DATA AUDITED BY:


M. S. Sparlin



Quality Control Coordinator

REPORT APPROVED BY:

A. P. Paradice



Laboratory Manager

VOLATILES ANALYSES IN WATER

Summary of Analytical Results

Method Blank Results

Quality Control Check Sample Results

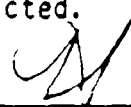

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst, Woburn Project No.: 0005-446ERT ID: 49287 / UC8 ProductClient ID: 5842-01Matrix: Water Sampled: 11/02/87 Received: 11/05/87Authorized: 11/05/87 Prepared: 11/12/87 Analyzed: 11/12/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	500,000
Bromomethane	ND	µg/L	500,000
Vinyl chloride	ND	µg/L	500,000
Chloroethane	ND	µg/L	500,000
Methylene chloride	ND	µg/L	2,000,000
Acetone	ND	µg/L	5,000,000
Carbon disulfide	ND	µg/L	200,000
1,1-Dichloroethene	ND	µg/L	200,000
1,1-Dichloroethane	ND	µg/L	200,000
trans-1,2-Dichloroethene	ND	µg/L	200,000
Chloroform	ND	µg/L	200,000
1,2-Dichloroethane	ND	µg/L	200,000
2-Butanone	ND	µg/L	1,000,000
1,1,1-Trichloroethane	ND	µg/L	200,000
Carbon tetrachloride	ND	µg/L	200,000
Vinyl acetate	ND	µg/L	1,000,000
Bromodichloromethane	ND	µg/L	200,000
1,2-Dichloropropane	ND	µg/L	200,000
trans-1,3-Dichloropropene	ND	µg/L	200,000
Trichloroethene	ND	µg/L	200,000
Dibromochloromethane	ND	µg/L	200,000
1,1,2-Trichloroethane	ND	µg/L	200,000
Benzene	ND	µg/L	200,000
cis-1,3-Dichloropropene	ND	µg/L	200,000
2-Chloroethyl vinyl ether	ND	µg/L	1,000,000
Bromoform	ND	µg/L	200,000
4-Methyl-2-pentanone	ND	µg/L	1,000,000
2-Hexanone	ND	µg/L	1,000,000
1,1,2,2-Tetrachloroethane	ND	µg/L	200,000
Tetrachloroethene -----	19,000,000	µg/L	200,000
Toluene	ND	µg/L	200,000
Chlorobenzene	ND	µg/L	200,000
Ethyl benzene	ND	µg/L	200,000
Styrene	ND	µg/L	200,000
Total xylenes	ND	µg/L	200,000

ND = Not detected.

Reported by Approved by  

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446
ERT ID: 49288 / Field Blank
Client ID: 5842-02
Matrix: Water Sampled: 11/02/87 Received: 11/05/87
Authorized: 11/05/87 Prepared: 11/11/87 Analyzed: 11/11/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	10
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

ND = Not detected.

Reported by *LL* Approved by *CS* *✓*


HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446ERT ID: 49289/ Shipping BlankClient ID: 5842-03Matrix: Water Sampled: 11/02/87 Received: 11/05/87Authorized: 11/05/87 Prepared: 11/11/87 Analyzed: 11/11/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	5
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

ND = Not detected.

Reported by Approved by  

VOLATILE ORGANICS

Surrogate Recovery Summary

Client Name: Unifirst, WoburnProject No.: 0005-446Matrix: WaterAuthorized: 11/05/87Received: 11/05/87


ERT ID	Client ID	Surrogate Compound		
		d ₄ -1,2,-Dichloro-ethane	d ₈ -Toluene	p-Bromofluoro-benzene
5842-01	49287 / UC8 Product	108	102	121*
5842-02	49288 / Field Blank	93	98	109
5842-03	49289 / Shipping Blank	106	99	108
04108	ERT Procedural Blank - Water	96	102	106
04408	ERT Procedural Blank - Water	99	101	117*

QC Advisory Limits:

76-114%

88-110%

86-115%

Reported by Approved by 

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624 + 624/HSL List

QUALITY CONTROL

Client Name: Unifirst Woburn Project No.: 0005-446

ERT ID: Laboratory Control Spike

Client ID: 0411LCS

Matrix: Water Prepared: 11/11/87 Analyzed: 11/11/87

<u>Parameter</u>	<u>% Recovery</u>	<u>QC Advisory Limits</u>
1,1-Dichloroethene	68	61 - 145%
Trichloroethene	79	71 - 120%
Benzene	89	76 - 127%
Toluene	85	76 - 125%
Chlorobenzene	83	75 - 130%

Reported by

CH

Approved by

CE

JP

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624 + 624/HSL List

QUALITY CONTROL

Client Name: Unifirst Woburn Project No.: 0005-446

ERT ID: Laboratory Control Spike Dup.

Client ID: 0442LCS0

Matrix: Water Prepared: 11/12/87 Analyzed: 11/12/87

<u>Parameter</u>	<u>% Recovery</u>	<u>QC Advisory Limits</u>
1,1-Dichloroethene	70	61 - 145%
Trichloroethene	88	71 - 120%
Benzene	118	76 - 127%
Toluene	98	76 - 125%
Chlorobenzene	106	75 - 130%

Reported by  Approved by  

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst Woburn Project No.: 0005-446ERT ID: ERT Procedural Blank - WaterClient ID: 04108Matrix: WaterSampled: NAReceived: NAAuthorized: NAPrepared: 11/11/87Analyzed: 11/11/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	5
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

NA = Not applicable.

ND = Not detected.

Reported by WApproved by CS JP

HAZARDOUS SUBSTANCE LIST (HSL) VOLATILE ORGANICS

EPA Method 624/HSL List

Client Name: Unifirst WoburnProject No.: 0005-446ERT ID: Procedural Blank - WaterClient ID: 04408Matrix: WaterSampled: NAReceived: NAAuthorized: NAPrepared: 11/12/87Analyzed: 11/12/87

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	5
Acetone	ND	µg/L	50
Carbon disulfide	ND	µg/L	2
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
2-Butanone	ND	µg/L	10
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Vinyl acetate	ND	µg/L	10
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
4-Methyl-2-pentanone	ND	µg/L	10
2-Hexanone	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2
Styrene	ND	µg/L	2
Total xylenes	ND	µg/L	2

NA = Not applicable.

ND = Not detected.

Reported by Approved by  

CHAIN-OF-CUSTODY RECORD

UNIFIRST, WOBURN

SAMPLE RECEIPT CHECK LIST

Client: *UNIFIRST WOBURN*

COC Record #(s): *20079*

Matrix	Container	ERT #(s)
<i>WATER</i>	<i>40ml VOA</i>	
<i>PRODUCT</i>	<i>40ml VOA</i>	
<i>WATER</i>	<i>1 L AMBER</i>	
<i>PRODUCT</i>	<i>1 L AMBER</i>	

1. Were samples shipped or hand-delivered?

Notes: *LARRY HOGAN*

2. Was COC record present upon receipt of samples?

Notes:

Yes ☒ No ☐

3. Was COC tape present/unbroken on outer package?

Notes:

Yes ☐ No ☒

4. Were samples received ambient or chilled?

Notes:

5. Were any samples received broken/leaking (improperly sealed)?

Notes:

Yes ☐ No ☒

6. Were samples properly preserved?

Notes:

Yes ☒ No ☐

7. Were COC types present/unbroken on samples?

Notes:

Yes ☐ No ☒

8. Any discrepancies between sample labels and COC records?

Notes:

Yes ☐ No ☒

9. Were samples received within holding times?

Notes:

Yes ☒ No ☐

Additional Comments:

*1 L Amber
1 L RC*

Samples inspected and logged in by _____ Date: *11/2/27*

CHAIN OF CUSTODY RECORD

Client/Project Name UniFirst			Project Location Woburn MA			ANALYSES <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">VOA HSL</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">BVA HSL</div> </div>							
Project No. D495-004			Field Logbook No.										
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.										
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	1/3A								REMARKS
UCB Product	11/2/87	11:30		Product	49287	✓	✓	49290					FULL STRENGTH 3 VOA VIALS + 1 DANGER
Field Blank	11/2/87	11:50		Water	49288	✓	✓	49291					3 VOA VIALS + 1 DANGER
Snipping Blank	10/31/87			Water	49289	✓	✗						3 VOA VIALS 624 only
Relinquished by: (Signature) <i>[Signature]</i>					Date 11/2/87	Time 14:02	Received by: (Signature) :					Date	Time
Relinquished by: (Signature)					Date	Time	Received by: (Signature)					Date	Time
Relinquished by: (Signature) :					Date	Time	Received for Laboratory: (Signature) <i>[Signature]</i>					Date 11/2/87	Time 14:02
Sample Disposal Method:					Disposed of by: (Signature)							Date	Time
SAMPLE COLLECTOR					ANALYTICAL LABORATORY Environmental Research and Technology, Inc. 33 Industrial Way Wilmington, MA 01887 617-657-4290							ERT	
												Nº 20079	

LABORATORY DATA PACKAGE FOR
BASE/NEUTRAL AND ACID EXTRACTABLE
HAZARDOUS SUBSTANCE LIST COMPOUNDS IN:

1. DNAPL (product) from well UC8

ANALYSIS OF LIQUID SAMPLES
FROM
UNIFIRST, WOBURN, MA

ERT PROJECT NO.0005-446
December 24, 1987

PREPARED FOR

J. Lawson

Prepared by
Analytical Chemistry Laboratory
ERT, A Resource Engineering Company
33 Industrial Way, Wilmington, Massachusetts 01887

11/6

W.L. UC-8 = 5.17'

TOTAL DEPTH 20.46' WITH ELECTRIC SOUNDER
NO PRODUCT ~~WATER~~ APPARENT WITH THE SOUNDER

BAILED ~ 8 GALLONS OUT OF THE WELL
FREE PRODUCT IS ONLY VISIBLE AS
BLEBS ON THE SURFACE OF THE WATER
AND ON THE WALLS OF THE BAILER

ANALYSIS OF SAMPLES
FROM
UNIFIRST WOBURN

INTRODUCTION

This report represents the results of analysis conducted on various liquid samples received by the ERT Analytical Chemistry Laboratory on November 2, 1987. The samples were to be selectively analyzed for B/N/A.

SAMPLE RECEIPT AND CHAIN OF CUSTODY

Routine inspection of the samples revealed them to be packaged properly and received in good condition.

Upon receipt, information from the submitted samples was recorded in the Master Log Book (and the LIMS computer system) and assigned ERT Control Numbers. These unique sample labels were affixed to respective sample containers and subsequently utilized throughout the laboratory analysis procedures for positive traceability.

ANALYTICAL PROCEDURES

The water samples were analyzed according to procedures as outlined in:

- a. Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, 40 CFR Part 136.
- b. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, revised, March, 1983.
- c. Standard Methods for the Examination of Water and Wastewater, 16th Edition, APHA, 1985.

QUALITY CONTROL PROCEDURES

Standard quality control procedures were implemented for all analyses. Laboratory reagent (method) blanks, laboratory duplicated samples, and laboratory fortified control samples were analyzed concurrently with each case of submitted samples. The laboratory normally prepares and analyzes one (1) blank, one (1) fortified sample, and one (1) duplicate sample for each case of samples received or for each twenty (20) samples, whichever is more frequent. A case consists of a finite, usually predetermined number of samples collected over a given time period from one particular site. Duplicate sample analyses are performed only when sufficient sample volume is received. The results of the analyses are reviewed by the laboratory quality control coordinator to insure compliance with established analytical control limits.

Laboratory prepared method blank samples and fortified samples are identified in the analytical result tables under the Field Identification number using a unique numbering system and also assigning one ERT sample number to each sample. The Prefix "MB" refers to Method Blank, and "LF" refers to Laboratory Fortification (i.e., a quality control recovery sample).

In most cases, the analytical results will have been corrected using mean method blank results.

RESULTS OF ANALYSIS

Analytical results for the submitted samples are presented in the appended tables. Summary tables for the results of duplicate, blank, and fortified control samples have also been provided in the Appendix.

DISCUSSION

Review of the results of the quality control/quality assurance samples analyzed concurrently with the submitted samples indicated that the analyses were within the acceptance criteria as established by the U.S. EPA.

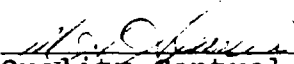
DATA AND REPORT APPROVAL FORM

SUBMITTED BY:

Analytical Chemistry Laboratory
ERT A Resource Engineering Company
33 Industrial Way
Wilmington, MA 01887
December 24, 1987

DATA AUDITED BY:

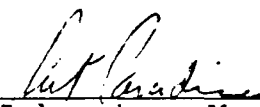
M. S. Sparlin



Quality Control Coordinator

REPORT APPROVED BY:

A. P. Paradice



Laboratory Manager

B/N/A ANALYSES IN WATER

Summary of Analytical Results

Method Blank Results

Quality Control Check Sample Results

ERT ANALYTICAL LABORATORY
SUMMARY OF ANALYTICAL RESULTS
SEMI-VOLATILE ORGANIC COMPOUNDS IN WATER

PROJECT NO: 0005-446

ERT NO: 49290

FLD ID: UC8 PRODUCT

CLIENT: UNIFIRST

SAMPLING SITE: ERT, WILMINGTON MA

DATE SAMPLED: 11/02/87

DATE ANALYZED: 11/18/87

<u>PARAMETER</u>	<u>RESULT</u> <u>ug/l</u>	<u>PARAMETER</u>	<u>RESULT</u> <u>ug/l</u>
PHENOL	<10	3-NITROANILINE	<50
ANILINE	<10	ACENAPHTHENE	<10
BIS(2-CHLOROETHYL) ETHER	<10	2,4-DINITROPHENOL	<50
2-CHLOROPHENOL	<10	4-NITROPHENOL	<50
1,3-DICHLOROBENZENE	<10	DIBENZOFURAN	<10
1,4-DICHLOROBENZENE	<10	2,4-DINITROTOLUENE	<10
BENZYL ALCOHOL	<10	2,6-DINITROTOLUENE	<10
1,2-DICHLOROBENZENE	<10	DIETHYL PHTHALATE	<10
2-METHYLPHENOL	<10	4-CHLOROPHENYL	
		PHENYL ETHER	<10
BIS(2-CHLOROISOPROPYL) ETHER	<10	FLUORENE	<10
4-METHYLPHENOL	<10	4-NITROANILINE	<10
N-NITROSO-DI-N-PROPYLAMINE	<10	4,6-DINITRO-2-	
		METHYLPHENOL	<50
HEXACHLOROETHANE	<10	N-NITROSODIPHENYL-	
		AMINE	<10
NITROBENZENE	<10	4-BROMOPHENYL	
		PHENYL ETHER	<10
ISOPHORONE	<10	HEXACHLOROBENZENE	<10
2-NITROPHENOL	<10	PENTACHLOROPHENOL	<50
2,4-DIMETHYLPHENOL	<10	PHENANTHRENE	<10
BENZOIC ACID	<50	ANTHRACENE	<10
BIS(2-CHLOROETHOXY) METHANE	<10	DI-N-BUTYL	
		PHTHALATE	<10
2,4-DICHLOROPHENOL	<10	FLUORANTHENE	<10
1,2,4-TRICHLOROBENZENE	<10	BENZIDENE	<10
NAPHTHALENE	32,000	PYRENE	<10
4-CHLOROANILINE	<10	BUTYL BENZYL	
		PHTHALATE	<10
HEXACHLOROBUTADIENE	<10	3,3'-DICHLORO-	
		BENZIDINE	<20
4-CHLORO-3-METHYLPHENOL	<10	BENZO(A) ANTHRACENE	<10

NA = NOT ANALYZED

ND = NOT DETECTED

Reviewed by: SP

QC: SP

DATE ANALYZED: 11/18/87

NA

QC:

ERT ANALYTICAL LABORATORY
SUMMARY OF ANALYTICAL RESULTS
SEMI-VOLATILE ORGANIC COMPOUNDS IN WATER

PROJECT NO: 0005-446
ERT NO: 49291
FLD ID: FIELD BLANK
CLIENT: UNIFIRST
SAMPLING SITE: WOBURN, MA

DATE SAMPLED: 11/02/87
DATE PREPARED: 12/04/87
DATE ANALYZED: 12/07/87

<u>PARAMETER</u>	<u>RESULT</u> <u>ug/l</u>	<u>PARAMETER</u>	<u>RESULT</u> <u>ug/l</u>
PHENOL	<10	3-NITROANILINE	<50
ANILINE	<10	ACENAPHTHENE	<10
BIS(2-CHLOROETHYL) ETHER	<10	2,4-DINITROPHENOL	<50
2-CHLOROPHENOL	<10	4-NITROPHENOL	<50
1,3-DICHLOROBENZENE	<10	DIBENZOFURAN	<10
1,4-DICHLOROBENZENE	<10	2,4-DINITROTOLUENE	<10
BENZYL ALCOHOL	<10	2,6-DINITROTOLUENE	<10
1,2-DICHLOROBENZENE	<10	DIETHYL PHTHALATE	<10
2-METHYLPHENOL	<10	4-CHLOROPHENYL PHENYL ETHER	<10
BIS(2-CHLOROISOPROPYL) ETHER	<10	FLUORENE	<10
4-METHYLPHENOL	<10	4-NITROANILINE	<10
N-NITROSO-DI-N-PROPYLAMINE	<10	4,6-DINITRO-2- METHYLPHENOL	<50
HEXACHLOROETHANE	<10	N-NITROSODIPHENYL- AMINE	<10
NITROBENZENE	<10	4-BROMOPHENYL PHENYL ETHER	<10
ISOPHORONE	<10	HEXACHLOROBENZENE	<10
2-NITROPHENOL	<10	PENTACHLOROPHENOL	<50
2,4-DIMETHYLPHENOL	<10	PHENANTHRENE	<10
BENZOIC ACID	<50	ANTHRACENE	<10
BIS(2-CHLOROETHOXY) METHANE	<10	DI-N-BUTYL PHTHALATE	<10
2,4-DICHLOROPHENOL	<10	FLUORANTHENE	<10
1,2,4-TRICHLOROBENZENE	<10	BENZIDENE	<10
NAPHTHALENE	<10	PYRENE	<10
4-CHLOROANILINE	<10	BUTYL BENZYL PHTHALATE	<10
HEXACHLOROBUTADIENE	<10	3,3'-DICHLORO- BENZIDINE	<20
4-CHLORO-3-METHYLPHENOL	<10	BENZO(A) ANTHRACENE	<10

Reviewed by: P

QC: RA

PROJECT NO: 0005-446
ERT NO: 49291
FLD ID: FIELD BLANK
CLIENT: UNIFIRST
SAMPLING SITE: WOBURN, MA

DATE SAMPLED: 11/02/87
DATE PREPARED: 12/04/87
DATE ANALYZED: 12/07/87

<u>PARAMETER</u>	<u>RESULT</u> <u>ug/l</u>	<u>PARAMETER</u>	<u>RESULT</u> <u>ug/l</u>
2-METHYLNAPHTHALENE	<10	BIS (2-ETHYLHEXYL) - PHTHALATE	<20
HEXACHLOROCYCLOPENTADIENE	<10	CHRYSENE	<10
2,4,6-TRICHLOROPHENOL	<10	DI-N-OCTYL PHTHALATE	<10
2,4,5-TRICHLOROPHENOL	<50	BENZOFUORANTHENES	<10
2-CHLORONAPHTHALENE	<10	BENZO (A) PYRENE	<10
2-NITROANILINE	<50	INDENO (1,2,3,CD) - PYRENE	<10
DIMETHYL PHTHALATE	<10	DIBENZO (A,H) - ANTHRACENE	<10
ACENAPHTHYLENE	<10	BENZO (G,H,I) - PERYLENE	<10

2-FLUOROPHENOL	49	PHENOL, D6	24
2,4,6-TRIBROMOPHENOL	67	NITROBENZENE, D5	57
2-FLUOROBIPHENYL	73	TERPHENYL, D14	68

* = OUTSIDE OF SURROGATE CONTROL LIMITS

Reviewed by:

QC: _____

ERT ANALYTICAL LABORATORY
SUMMARY OF ANALYTICAL RESULTS
SEMI-VOLATILE ORGANIC COMPOUNDS IN WATER
LABORATORY METHOD BLANK SAMPLE

PROJECT NO: 0005-446

ERT NO: 50411

FLD ID: MB8701007

CLIENT: UNIFIRST

SAMPLING SITE: ERT, WILMINGTON MA

DATE SAMPLED: 12/04/87

DATE PREPARED: 12/04/87

DATE ANALYZED: 12/07/87

<u>PARAMETER</u>	<u>RESULT</u> <u>ug/l</u>	<u>PARAMETER</u>	<u>RESULT</u> <u>ug/l</u>
PHENOL	<10	3-NITROANILINE	<50
ANILINE	<10	ACENAPHTHENE	<10
BIS (2-CHLOROETHYL) ETHER	<10	2,4-DINITROPHENOL	<50
2-CHLOROPHENOL	<10	4-NITROPHENOL	<50
1,3-DICHLOROBENZENE	<10	DIBENZOFURAN	<10
1,4-DICHLOROBENZENE	<10	2,4-DINITROTOLUENE	<10
BENZYL ALCOHOL	<10	2,6-DINITROTOLUENE	<10
1,2-DICHLOROBENZENE	<10	DIETHYL PHTHALATE	<10
2-METHYLPHENOL	<10	4-CHLOROPHENYL	
		PHENYL ETHER	<10
BIS (2-CHLOROISOPROPYL) ETHER	<10	FLUORENE	<10
4-METHYLPHENOL	<10	4-NITROANILINE	<10
N-NITROSO-DI-N-PROPYLAMINE	<10	4,6-DINITRO-2-	
		METHYLPHENOL	<50
HEXACHLOROETHANE	<10	N-NITROSODIPHENYL-	
		AMINE	<10
NITROBENZENE	<10	4-BROMOPHENYL	
		PHENYL ETHER	<10
ISOPHORONE	<10	HEXACHLOROENZENE	<10
2-NITROPHENOL	<10	PENTACHLOROPHENOL	<50
2,4-DIMETHYLPHENOL	<10	PHENANTHRENE	<10
BENZOIC ACID	<50	ANTHRACENE	<10
BIS (2-CHLOROETHOXY) METHANE	<10	DI-N-BUTYL	
		PHTHALATE	<10
2,4-DICHLOROPHENOL	<10	FLUORANTHENE	<10
1,2,4-TRICHLOROBENZENE	<10	BENZIDENE	<10
NAPHTHALENE	<10	PYRENE	<10
4-CHLOROANILINE	<10	BUTYL BENZYL	
		PHTHALATE	<10
HEXACHLOROBUTADIENE	<10	3,3'-DICHLORO-	
		BENZIDINE	<20
4-CHLORO-3-METHYLPHENOL	<10	BENZO (A) ANTHRACENE	<10

Reviewed by: N

QC: 12/14

DATE ANALYZED: 12/07/87

<10

77

* = OUTSIDE OF SURROGATE CONTROL LIMITS

DATE ANALYZED: 12/07/87

QC:

CHAIN-OF-CUSTODY RECORD

UNIFIRST WOBURN

WOBURN, MA

SAMPLE RECEIPT CHECK LIST

Client: *UNIFIRST WOBURN*

COC Record #(s): *20079*

Matrix	Container	ERT #(s)
<i>WATER</i>	<i>40ml VOA</i>	
<i>PRODUCT</i>	<i>40ml VOA</i>	
<i>WATER</i>	<i>1 L AMBER</i>	
<i>PRODUCT</i>	<i>1 L AMBER</i>	

1. Were samples shipped or hand-delivered?

Notes: *LARRY HOGAN*

2. Was COC record present upon receipt of samples?

Notes:

Yes ☒ No ☐

3. Was COC tape present/unbroken on outer package?

Notes:

Yes ☐ No ☒

4. Were samples received ambient or chilled?

Notes:

5. Were any samples received broken/leaking (improperly sealed)?

Notes:

Yes ☐ No ☒

6. Were samples properly preserved?

Notes:

Yes ☒ No ☐

7. Were COC types present/unbroken on samples?

Notes:

Yes ☐ No ☒

8. Any discrepancies between sample labels and COC records?

Notes:

Yes ☐ No ☒

9. Were samples received within holding times?

Notes:

Yes ☒ No ☐

Additional Comments:

*1 L Ambient
1 L RL*

Samples inspected and logged in by _____ Date: *11/2/27*

CHAIN OF CUSTODY RECORD

Client/Project Name Unit First			Project Location Woburn MA			ANALYSES					
Project No. D495-004			Field Logbook No.								
Sampler: (Signature) <i>Jeffrey S. Dawson</i>			Chain of Custody Tape No.								
Sample No. / Identification	Date	Time	Lab Sample Number	Type of Sample	VOA HSL	BOA HSL					REMARKS
UCB Product	11/2/87	11:30		Product 49287	✓	✓	49290				FULL STRENGTH
Field Blank	11/2/87	11:50		Water 49288	✓	✓	49291				3 VOA VIALS + 1 PARAMETER
Shipping Blank	10/3/87			Water 49289	✓	✗					3 VOA VIALS ONLY
Relinquished by: (Signature) <i>Jeffrey S. Dawson</i>					Date 11/2/87	Time 14:02	Received by: (Signature)			Date	Time
Relinquished by: (Signature)					Date	Time	Received by: (Signature)			Date	Time
Relinquished by: (Signature)					Date	Time	Received for Laboratory: (Signature) <i>Debra Gouweru</i>			Date 11/2/87	Time 14:02
Sample Disposal Method:					Disposed of by: (Signature)					Date	Time
SAMPLE COLLECTOR					ANALYTICAL LABORATORY Environmental Research and Technology, Inc. 33 Industrial Way Wilmington, MA 01887 617-657-4290					ERT	
										Nº 20079	

APPENDIX C
FIELD NOTES

7
9/25/87 clear warm humid
6:15 Unifirst National
Jeff Ed from FPS here

6:30 John Bowen DL Mahan
arrives

7:00 HNU 10.2 cu bulbs Huzco 555 lb
span 9.80
background 0.25

Hppus gas 15.8 span 9.8

span 10.0 15.2

Hppus gas 78.0 span 10

7:10 John Halliday arrives, reviews
work John → give copy of RDP

8:05 Ed Kim EPA ESD arrives

drill water in tender is
from zone near D.L. Mahan's
ships - samples taken
by Ed Kim

send Kevin TPS basket

UC15 Hand @ cyclone discharge

5' NR background 2-4

10' NR

15' NR

20' NR

25' NR

30' NR

35' NR

40' NR

45' NR

50' NR

Top of Reck 51'

53' NR

58' NR

63' NR

70' NR

75' NR

9:10 John Cherry arrives

→ arrange for Purchasing Solicitor
HSC

→ sample soil for ^{all} ~~other~~ ROBT
metals ~~data~~

Rob Falcato EBASCO

933-0476

call when well-site
sampled

12:30 FPS tanker arrives
strong odor, clear

1:30 Kathy on site

John out all night

Mobil Vactra #4 drilling
oil - lubricator downhole hammer

3:30 Dittles depart

Pale - leave oil sample
pick up bottles for soil
&c

→ Diane → field lab work again
showing methylene chloride
→ in DZ bottle, picking
new bottle (1 lb amber)
of fresh DI.

9/24/87 down rig

HAV span 9.8
14 ppm gas P vlt

Final gas 6.25 returns
to drift down
need new 14 ppm gas

64 ppm	@ 6.25	22 ppm
	9.8	83 ppm
	10.0	82 ppm

61

9/2/87 warm rain

6:10 Unifirst Walrus
FPS here, Maher
more can, set up for
steaming.

decon. rig & tender

FPS tanker clean, Ch. 200

set up UC16

8:25 Susan MacLennan
Ed Kim

Depth Maher's tender
fill from FPS tanker

12:30 depart

62

UC16 HNU

1' NR

background

3' NR

2-4

4' NR

never started

5' NR

6' NR

7' NR

8' NR

9' NR

10' NR

11' NR

15' NR

20' NR

25' NR

77 416

56 131

1213 28.5

bottom of UC16
28.4'

031

10/1/87 clear wall

5:55 Alvin Rust Walm
FPS & D Marine strategy6:30 inspect tanks at FPS tank
light Cl odor, clear

decon. rig, tender & truck

7:50 HNU background 1.2
rig idling nearby
span 9.8
64 ppm gas → 78
Spankko 76

great difficulty maneuvering
for decon & setup - some
employees uncooperative about
parking requiring delayed
set up, key stolen from
Boharts after employees
arrive → FPS goes to get
new key

64

8:15 Ed Kim

8:20 Delaney arrives

9:00 start drilling

UCI#	HNU	background ~ 1.2
2'	NR	
3'	NR	Ed fills VON vials
4'	NR	& 2 plastic bags
5'	NR	w/ cuttings
6'	NR	
7'	NR	
8'	NR	
9'	NR	
10'	NR	
11'	NR	
15'	NR	
		dust affects detector & meter
27'	NR	HNU dried out

9:40 Delaney departs

9:55 Ed Kim departs

→ Jack Halliday

11:00 Delaney returns from
NEP

1000' well is open for
pump repairs

300 & 500 wells have
pumps & torque
arresters → cannot
get tube log

11:45 Delaney departs

11:30 Bob Maher

1:00 Legant

FPS tank trailer parked
at CRT 'til 10/5

10/2/87 Clear cool

4:50am Bluebird William

Dullus FPS arrive shortly
decon rig, tender & tanks
set up on UCLB

HNO 9.8 span

64 ppm gas → 73

background ~15

7:10 Ed Kim arrives, 9:00 departs

Hercules Analytical, Stonham
w/in 5 days

MA cert. & submitted QC

UC18 HNU

2' NR

3' NR

4' NR

5' NR

6' NR

7' NR

8' NR

9' NR

10' NR

11' NR

12' NR

13' NR

13.4' NR

15' NR

20' NR

25' NR

30' NR

11:00 depart

24 2"

56

188

10/5/87 clear cool

4:00 am Alvin & Waleen

4:55 John & Waleen am

5:00 FPS, decar rig, tender tools

6:10 HNU span 9.8

14 ppm gas 14.4

104 ppm gas 75.0

7:10 Ed Kinn coming → 11:30

9:30 Debany → 11:30

10:30 Munman → 11:00

11:30 finish drilling - clean up
of break rig down

1:00 depart

UC19	HNW	
3.0	NR	background 0.5 screw in casing w/o air to 3.0'
4.0	NR	
5.0	NR	
6.0	NR	
7.0	NR	old top soil? dk brown m-f SA so silt cuts mugs?
8.0	NR	
9.0	NR	
10.0	NR	
11.0	NR	
12.0	NR	
13.0	NR	
14.0	NR	
15.0	NR	
16.0	NR	16.0-16.5 cobbles
17.0	NR	
18.0	NR	
19.0	NR	
20.0	NR	
21.0	NR	

		2.14 KAZ	10.
22.0	NR	5.7	
23.0	NR	58.7	
24.0	NR	58.6	
25.0	NR		
26.0	NR		
27.0	NR		
28.0	NR		
29.0	NR		
30.0	NR		
31.0	NR		
32.0	NR	cobbles, dolerite flows to 32.8	
33.0	NR		
34.0	NR		
35.0	NR		
36.0	NR		
37.0	NR	37.5 ghd	
38.0	NR	39.0 inject water	
39.5	NR		
		casing to 40.3	
40.5	NR		
45	NR	pink sand	
50	NR	ghd, dark getting	
55	NR		

71

2:00 Bruce Barker → Crew wants
to load timber only between
6 am & 4 pm → also wants
bills of lading to track lots
of water

5:00 Richie & John TPS → Kevin
turned away @ CWW @ 3:30
no water

5:05 Call David & Dan → no
drilling tonight

can't reach Larry → hung
5:10 - 6:45

72

10/6/87 clear coal
4:50 am. Ulin first Waleen
5:00 Making TPS arrive
descon. rig, tender & tools

5:45 HNO₃ - background O₂
span 9.8 14 ppm 11.4
7.0 14.0
of Sulfur, gas cylinder
empty

64 ppm
span 7.0 100
10.0 93
9.8 75

7:00 Ed Kim arrives → 8:00
call Ed re: sampling next
Wednesday
→ Barbara wants full
15L in EPA split samples

10:00

UC 20 HCU background 0.4

2.0 NR 24.2

2.5 NR 5.10

3.0 NR 18'4"

4.0 NR carrying 2.0

5.0 NR

6.0 NR

6.3 NR ghd top of rack

7.0 NR pink & dk grey gnd

8.0 NR → 10' NR

18 NR inject water @ 8.0

20 NR

22 NR

26' NR

27' NR

6:55 Depart

no road wyes yet

74

1/8/87 p.c. war

1:40 Alvinist Nelson under
gate

4:42 UC 14 25 Olympia
246 ft. land drilling

5:00 Alvinist

5:05 FPS

5:10 Grouse

5:15 Kevin Thilideau → picks up car

leave rig, tender, tools &
lubricat

6:00 D.O. Maken departs

6:05 UC 14 making down
Kevin picks up tanker

7:10 depart

9:30 Unkint - TX done cleaning?

10/27/87 H₂O Calculations

010 ac

10:50	Butt	gas	reads
	span 684	64	68
	730	64	64
	730	53	54

10/28/87 warm rain - off/ac drizzle

6:50 Christ Moleum
Edvin arrives

→ check parameter list
624 v. RCRA method
cited in QA/QC plan

7:15 Langarius

11:15 electric sounder stays on
to bottom
Σ 11.5 ft from top of 6 m
spring

E1

no evidence of product in
trailer

Windsor-Chester Mill Inc
Windsor MA
plastic clothes line (and used)
for trailer

HNO 110 max in jar
lead pile

UC9 7 1095
electric sounder stays on
HNO → no response

water is rusty some fine
needles

UC10 7 1155
electric sounder stays on
HNO max 3 ~2 steady

HNO background 0

E2

water @ bottom rusty &
salt

UC17 7 9.39
electric sounder stays on
water rusty & salt @ bottom
HNO ~2

UC20 7 15.18
electric sounder stays on
water clean
HNO ~1

EDA not field filtering
for metals analyses

UC11 7 10.25
electric sounder stays on
water rusty @ bottom
HNO max 30 ~20

11:30 depart

33

11/2/87 clear coal
 6:50 Lin first N alum
 drillers arrive Danby Rick
 start moving into loading dock
 to occupy UCB

9:30 Ed Kind Dave EPA Annie

UCB lower 10 ft NW well & hit
 142. all at water
 no stick up.

21.0 holds weight of rig, spin
 3.2 bit through
 17.8

bit destruction @ 17.8

drill to 19.4 break rods

lower electric sampler

▽ 4.89

product 13.64

34

cuttings pushed up into
 rods - to 17.0
 1.36
 15.64

odor @ rods & casing
 H₂O - 300-500 lbs in rods &
 casing

300 in rods

NO in breathing zone
 CCl₄ Dräger < 1 ppm

total product pumped

PER { 3/40 ml vials

1/1 L amber bottle

EPA { 2/40 ml vials

~ 2 in in ~ 2 L amber bottle

no recovery after ~ 1 1/2

11/3/87 cloudy warm

6:50 Unsubst. Mahum
Kelly Drillers here,
Ed & Diane arrive shortly
quintette pump fails,
Ed goes to get EPA pump

pump thru rods, EPA
collects $< \frac{1}{4}$ in water
of 21 bottles

9:10 Tom Trainer - can run
all HSL organic compounds
on product including
Pest. & PCB

✓ Power wd 311340 NH
Nissan Sentra beige TOY 174 FL
✓ Cherry gold 982 DCM MA
✓ ODS gray K6136 MA

9:15 FPS arrives, sets up
drums & 6 to receive
drill wash

UCB pull roll bit
drive NW casing to 9.0
ecore shoe 0.5, 5, 2' & 1'

no 1' available to bring
top of NW high enough for
T to screw into

threads of NW damaged -
cannot thread sub into
to bump up.

need new 2 gate locks
S71D screws III
S70D?

need NW return

3:00 depart

11/4/87 Crazy work

6:00 Unifirst Wabun
TFS here
drillers & EPA arrive
shortly

remove 1' NW, add 2' NW;
9.5' NW; drive to 9.0'

25.7
20.8
4.9

put better bit on NW side
0.7'

30.7
20.8
9

return water comes up between
HW & NW casing, stuff w/
rope, pump off & press w/
wet-dry vacuum

HW no response in leaching
zone; 20-30 @ discharge of
T

10:25 Ed & Diane leave; call
Ed re: tomorrow's work

wash is heavy rods pushed
down all the way

HW ~ 300 @ collection T;
2-3 in leached leaching
zone

10:20 Kevin Penns arrives

run wash 'til it's clean
@ 20.8 ft

5' SS 2 in Ø blank riser &
plug have not arrived

2 5' screen 10.75
1.5' screen & 5' riser 10.3
total 21.05

21.05
3.0
18.05

Drague Cdy << 5 ppm
in solids drum

screen stop @ 18.05 -
make arrangements

103

to clean out again
tomorrow - if not,
will spin NW

11/5/87 cloudy warm

12:30 Underfoot Malm

UC8 NW @ 7.0

ran to 14, cleaned out
ran to 18 w/ bit
fell back to 14.5
lost water 14.5-15 ft
- cleaning out to 20.8
will try again

1:10 depart

90

11/23/87 clear cool

6:50 Underfoot Malm

7:10 David & Steve arrive
w/ longer stick across
road to UC21

Don & Tom Salvat arrive
set up for UC4

UC14 belocked @ 150', rounded
w/ electric rounder, returns
w/ 200' stick tape, push
frame to 300', seems clear;
final rounding w/ electric
rounder weighted w/ 2 files;
holes @ 200' can lower, but
cannot pull back - lower
two bottoms still cannot pull
back

LAWSON - /839-9227/

11/5

VC-8

W.L. @ 7:45A 6.95' - 1.0 = 5.95'

NO FREE PRODUCT NOTED IN THE WELL WITH SOUNDER
BORING IS OPEN TO 18'

SPINNING TAE 3" CASING 5 DRUMS ARE
FILLED BY 9:15A SPINNING STARTED AT 8:30A

9:45 ED Kim + DIANE ARE ON SITE
ED WANTS A WORK PLAN FOR ALL PROJECT
WORK TO DATE PRIOR TO THE POIP - LEFT @ 10:30

- DEEP HOLES OFF SITE
- ORIGINAL PROJECT INVESTIGATION ETC.

2" SCREEN + CASING = 21.05' IN LENGTH

7:00A 3" CASING IS DOWN TO 14.5' AND THE ROLLER
BIT IS BLOCKING HERE REPEATABLY - WEATHERED SEEM?

LOST ALL DRILLING WATER FROM 14.5' WITH 3" CASING

WATER RETURN @ ~17' WITH ROLLER BIT

FREE PRODUCT IN WASH FROM ~20' WITH ROLLER BIT
HONU REGISTERED > 200 PPM OVER WASH COLLECTION
BARREL THEN STOPPED WORKING. (19'-20' DUE TO WASH WATER LAG)

0.14
CUT-OFF
0.5'

- HONU IS WORKING AGAIN!? READINGS OVER SAME BARREL
ARE BACK DOWN TO 30 PPM NO PRODUCT VISIBLE

WELL PIPE IS IN 3" STICK UP IS 0.46' FROM 3" TO PIPE SHOULDER
IS 0.44' BOTTOM OF PIPE IS AT 21.03' ***

MEASURED DEPTH OF WELL IS 20.66'

File	Date	Dwg.	Project	Proposal
11/9/87 UNIFIRST UC-8				
W.L. 5.53				
BOTTOM 20.46				
NO FREE PRODUCT APPARENT NO PRODUCT VISIBLE IN BAILER EXCEPT FOR SMALL BLEBS ON THE BAILER WALL. ODOR IS STRONG.				
THERE IS NO CHANGE FROM THE CONDITIONS OBSERVED ON FRIDAY 11/6/87				
Jung / Kym				